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VIA E-MAIL and U.S. Mail

July 21, 2004

Mr. Kevin Turner
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Emergency Response Branch
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Mr. Steven Faryan
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HSE-5J
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Clayton Project No. 15-03095.13-002

Subject: **ILR000128249**
LPC 1190505040 – Madison County
The Hartford Area Hydrocarbon Plume Site / Hartford, Illinois
Response to Comments – VCS Upgrade Technical Memorandum

Dear Messrs. Turner and Faryan:

Clayton Group Services, Inc., on behalf of the Hartford Working Group (HWG), has reviewed the comments provided under United States Environmental Protection Agency (USEPA) cover dated June 21, 2004. The USEPA and the Illinois Environmental Protection Agency (Agencies) addressed the Vapor Control System (VCS) Upgrade Technical Memorandum, dated May 6, 2004 and prepared by Clayton. This letter has been prepared to satisfy the requirement under Paragraph 48 of the Administrative Order on Consent (AOC) to prepare a work plan and schedule for implementation of the Vapor Control System upgrade and expansion as an interim measure.

The Agency, in its June 21, 2004 letter, requested a discussion on the acceleration of the approval of the proposed system expansion and vapor control boring (VCB) replacement in order to expedite ordering of long-lead time equipment. This topic was discussed with the Agencies in the monthly meeting in Collinsville, IL on July 1, 2004 with the resolution that USEPA would issue a letter approving the proposed upgrade with the requirement that a work plan be prepared and submitted to the Agencies for the planned expansion of the VCS.

On July 2, 2004 the Agency, in a letter from Mr. Kevin Turner, approved the current VCS system upgrade. Currently the HWG is in the process of ordering the equipment that has a long lead-time. Also as of the week of July 12, 2004, Clayton has begun the

process of installing the vapor monitoring probes and the replacement vapor control borings. The originally proposed and approved upgrade to the VCS is considered Phase I.

VAPOR CONTROL SYSTEM (VCS) EXPANSION

Expansion of the VCS has been split into three basic phases. Phase IA includes an area from E. Forest Street south to Hawthorne Street, east of N. Market Street (see Figure 1). Phase II includes an area around the community center and the areas west of the Market Street between Elm and Watkins Street (see Figure 2). Phase III includes the remaining areas within the free-phase hydrocarbon plume in the area north of VCB-1 and an eastern area along N. Olive Street from Rand Street to E. Forest Street (see Figure 3).

Phase IA VCS Expansion

VCS Expansion on Watkins Street

Three additional vapor control borings will be installed into the Main Sand beneath Watkins Street. Figure 1 shows the approximately locations based on a design basis of 150-foot radius of influence. The Soil Vapor Extraction (SVE) pilot test conducted near VCB-1 earlier this year illustrated that at least a 150-foot radius of influence would be produced at between 75 and 100 scfm from each vapor control boring. Based on this information, circles were drawn around each existing VCB that will be upgraded and the new VCBs proposed for Watkins Street.

Existing piping installed during the E. Watkins Street sewer rehabilitation project earlier this year will be used to connect the new VCBs to the existing system (see Figure 4). As shown in Figure 1, the new VCBs will be connected to the existing piping along Watkins Street. A vault box similar to the replacement VCBs will be installed over the new wells and a control, butterfly-type valve will be located in the vault box for future control.

New underground piping will be installed beneath N. Olive to facilitate connection to the end of each existing pipe to the control vault located just south of Elm on N. Olive. Currently the N. Olive control vault has the capacity for expansion of three additional wells. These ports will be used to connect the three new VCBs to be installed on Watkins Street.

Additional Vapor Monitoring Points

A total of six additional vapor monitoring points will be installed around the three new VCBs installed on Watkins Street. These vapor monitoring points (MP) will be installed and constructed the same as the currently approved vapor monitoring points. The MPs

will be installed in the alley between Forest and Watkins Streets, on Watkins Street, and in the alley between Watkins and Maple Streets (see Figure 1).

Sewer Backfill Extraction Wells on Watkins Street

In addition, the vapor extraction wells (4 total) that were installed in the sewer backfill will be connected the VCS. Figure 4 shows the location of each of these extraction wells. Each vapor extraction well has a valve and is connected to one common line. The end of the common header will be connected to the N. Olive Street control vault. The same trench used to install connection piping from the three new VCBs will also include the pipe connecting the four extraction wells in the sewer backfill.

Additional connections for the extraction wells in the sewer backfill will be accomplished by modifying the existing vault since there will be no more connection slots after the new VCBs are installed. An additional section of 8-inch diameter steel piping will be added with flanged fittings for 4-inch diameter extraction pipe connections. As necessary the vault will be expanded or a separate vault will be installed adjacent the existing vault to make these connections.

VCS Expansion on E. Maple Street

Since the identified plume does not extend further south than Watkins Street, no additional VCBs in the Main Sand are proposed for Maple or Hawthorne Streets.

Maple Street will be addressed by installing vapor extraction screens in a manhole along the sewer line. A manhole near the intersection of Maple and the north-south alley near N. Olive will be used to place an extraction well. Wells will be installed within existing manholes with a valve control vault adjacent to the manhole. The vapor recovery screens will be connected to the VCS via underground HDPE lines. The lines will be installed through the north-south alley up to Watkins Street. From Watkins Street, the pipe will be installed in trench leading east to N. Olive. This common trench will house all of the pipelines from the VCBs, sewer backfill extraction wells and the sewer control wells. This trench will be extended from Watkins Street up N. Olive to the existing control vault where the final connection will be made.

A water level sensor will be installed in the manhole to provide a system alarm should the water level in sewer rise to a level that may cause the system to pull in large amounts of liquid. This sensor will be connected to the proposed programmable logic controller (PLC) and allow for an alarm message to be sent to operations personnel. At that point, operations personnel will close the valve to these extraction wells until the liquid level has dropped to an acceptable level.

VCS Expansion on Hawthorne Street

Since the identified plume does not extend further south than Watkins Street, no additional VCBs into the Main Sand are proposed for Maple or Hawthorne Streets.

Hawthorne Street will be addressed by installing vapor extraction screens in a manhole along the sewer line. A manhole near the intersection of Hawthorne and the north-south alley near N. Olive will be used to place an extraction well. Wells will be installed within existing manholes with a valve control vault adjacent to the manhole. The vapor recovery screens will be connected to the VCS via underground HDPE lines. The lines will be installed through the north-south alley up to Watkins Street. From Watkins Street, the pipe will be installed in trench leading east to N. Olive. This common trench will house all of the pipelines from the VCBs, sewer backfill extraction wells and the sewer control wells. This trench will be extended from Watkins Street up N. Olive to the existing control vault where the final connection will be made.

A water level sensor will be installed in the manhole to provide a system alarm should the water level in sewer rise to a level that may cause the system to pull in large amounts of liquid. This sensor will be connected to the proposed programmable logic controller (PLC) and allow for an alarm message to be sent to operations personnel. At that point, operations personnel will close the valve to these extraction wells until the liquid level has dropped to an acceptable level.

As was done during the sewer rehabilitation on Watkins Street, some additional piping will be installed in the piping trenches down the north-south alley between Hawthorne and Watkins Streets. This additional piping could then be used for any additional expansion or system modification that may be necessary without creating a new trench.

Additional VCS Equipment

In the approved VCS upgrade, a total of two blowers and two thermal oxidizers are planned for installation in parallel operation. With the additional VCBs on Watkins Street, the vapor extraction wells in the sewer backfill along Watkins Street and the extraction wells in sewers on Maple and Hawthorne, the need for additional equipment is currently being evaluated. Review of the existing system piping sizes indicates that additional blowers can be added to the VCS without substantial vacuum loss with the current piping.

As was discussed during the July 1, 2004 meeting in Collinsville, IL, the VCS upgrade includes the use of modular blowers and thermal oxidizer pairs to provide the required flow and vacuum. This approach allow for potential system expansion through the addition of more blower/oxidizer pairs to increase system airflow.

The treatment system pad will be sized for a total of four (4) blower/oxidizer pairs so that an additional pair could be added if deemed necessary during future system expansion evaluation. Piping will be configured such that an additional blower/oxidizer pairs can be easily added with minimal piping additions. Figure 1 shows the proposed expanded treatment compound pad.

Community Center Vapor Mitigation

As part of Phase IA, the HWG is planning to address the issues related to the Community Center. ENSR is in the process of obtaining additional subsurface information regarding vapor migration into and surrounding the Community Center. On-going activities being conducted by ENSR include the following.

- Completion of concrete cores in the basement of the Community Center to determine sub-slab soil conditions.
- Completion of a geophysical survey (week of July 26th – 30th) to determine the following:
  - Possible presence of an abandoned sewer main that may have extended along the original Arbor Street location and under the Community Center prior to construction in the early 1950s.
  - Location of the current sanitary sewer service lateral to the Community Center.
  - Nature and extent of the former school building foundation in the parking lot south of the Community Center.
  - Locations of floor drain lines and sewer lines beneath the basement floor of the Community Center.
- Installation and sampling of sub-slab vapor sampling points in the basement of the Community Center.
- Installation and sampling of additional vapor monitoring points around the exterior of the Community Center, as proposed in the Addendum to the Vapor Migration Pathway Assessment Work Plan.

At this time, a detailed approach and schedule cannot be determined until the on-going information is gathered and evaluated. Options being evaluated include, but are not limited to, the following:

- Installation of a sub-slab system;
- Active venting of the sanitary sewer;
- Installation of an exterior soil vapor extraction system;

- Installation of vapor barriers inside or outside the Community Center;
- Positive pressure ventilation; and

Therefore, the HWG is planning on providing an additional plan (under separate cover) for the Community Center by August 20, 2004. At that time, a detailed plan for mitigation of the Community Center along with an implementation schedule will be submitted to the Agency.

VCS System Expansion Evaluation

In order to evaluate and implement (if deemed necessary) further VCS expansion, it is imperative that additional information be obtained. This will include a combination of additional information from the ongoing or planned investigation activities with the Village of Hartford and system performance data gathered during initial operation of the upgraded VCS. The following sections describe the proposed process for evaluating this data.

VCS System Performance Evaluation

As part of the installation of the replacement VCBs, some shallow extraction wells will be installed and connected to the VCS. Proposed locations include VCB-1, VCB-6, and VCB-8. These were chosen due their location within North Hartford where there are several upper strata above the main sand. These wells would be only screened in these upper strata so that proper evaluation of vacuum influence can be determined during operation. If a lower permeable zone is screened in the well (as was the case during the pilot test), all of the flow will come from that lower zone and will not accurately reflect the extraction potential from the upper strata. With these shallow wells screened in the upper strata only, it will be possible to evaluate flow and vacuum influence in these upper strata during system operation and evaluation.

The additional shallow wells will be connected to the piping (via a tee connection) from the replacement VCB to the existing VCB. A separate vault box and valve will be installed on these wells to provide control. This arrangement will allow for either the replacement VCB or shallow extraction well or both to be operated as part of the VCS.

As part of the first six months of operation, vacuum influence measurements will be collected from the vapor monitoring points. This information will be used to better define the expected influence of the VCS in both the shallow strata in the northern portion of North Hartford and the Main Sand throughout much the free-phase hydrocarbon plume.

In reviewing the information obtained regarding the PNEULOG procedure for evaluating extraction capabilities of geological units, this method is primarily focused on optimization of existing systems. The process requires that a screened interval throughout all strata be available for conducting the evaluation. As part of the VCS evaluation during the first six months of operation, the PNEULOG system will be used to conduct an evaluation on the new VCBs (which will be screened through all strata) once they have been installed and operated. It is anticipated that at least all of the replacement and new VCBs will be evaluated. If possible, some of the vapor monitoring points or groundwater monitoring wells may be used to further the subsurface evaluation using the PNEULOG process.

Additional Data Evaluation

Additional subsurface data from the Vapor Migration Pathway Assessment, as well as the additional geologic and chemical data obtained from the continuing Free-Product Hydrocarbon investigation will be invaluable for the evaluation of VCS expansion. At the current time, the migration pathway for the vapors is unknown. Although the VCS is capable of removing hydrocarbon mass from the Main Sand, it is unknown whether it has any effect on the vapor migration into individual homes and businesses.

In order to evaluation and/or design a VCS system expansion as part of an interim measure, the vapor migration pathway must be understood. The investigation is currently focused on evaluating migration of vapors through the upper permeable strata (N. Olive, Rand, EPA), as well as through utilities (i.e., sewers). If either one or both of these migration pathways are confirmed as part of the assessment, mitigation approaches will be evaluated and designed as part of the interim measure vapor control system.

Phase II VCS Expansion

Expansion Evaluation

This area was previously identified to the Agencies as the northwest area of north Hartford around the community center and the areas west of the Market Street between Elm and Watkins Street.

Conceptual expansion to these areas may involve either additional VCBs in the Main Sand, connection to the sewers as proposed for the Phase IA expansion, or a combination of both. However, the scope of the expansion will not be able to be determined until the VCS upgrade is operational and run for a least 6 months and the remainder of the vapor migration assessment is completed to assist in defining the vapor migration pathway that needs to addressed as part of the interim measures.

Based on the results of the upgraded VCS operation and the additional investigation, a conceptual design (if deemed necessary) for the Phase II expansion will be prepared and submitted to the Agency for approval. Once approved, the HWG will implement the Phase II VCS expansion.

Phase III VCS Expansion

Expansion Evaluation

This area was identified as the remaining areas within the free-phase hydrocarbon plume in the area north of VCB-1 and an eastern area along N. Olive from Rand to Forest.

Conceptual expansion to these areas may involve either additional VCBs in the Main Sand, connection to the sewers as proposed for the Phase IA expansion, or a combination of both. However, the scope of the expansion will not be able to be determined until the VCS Phase II expansion is operational and run for a least 6 months and the remainder of the vapor migration assessment is completed to assist in defining the vapor migration pathway that needs to addressed as part of the interim measures.

Schedule

Phase I and IA

The schedule included in the original VCS upgrade technical memorandum is still applicable for the original system upgrade activities. It is anticipated that the Phase IA expansion activities can be accomplished within the existing schedule as added activities to the VCS upgrade.

One potential pitfall with the schedule for Phase IA involves the work to be conducted on Hawthorne Street. This street is a state road and the work proposed will require approval and permitting by the Illinois Department of Transportation. It is difficult at this time to determine how long it will take to obtain these permits. Work will begin on developing and submitting permits prior to Agency comments in order to keep the project on schedule.

Phase II

It is anticipated that expansion evaluation will be conducted during the first 6 months of operation of the VCS upgraded and Phase IA expanded system. Currently the schedule indicates that VCS system startup will occur at the end of January 2005. Therefore by approximately the end of June 2005 the evaluation for expansion will be completed.

By the end of July 2005 a work plan outlining a conceptual design for Phase II expansion (if necessary) will be delivered to the Agencies for review and approval. This plan will describe the basis for the proposed Phase II expansion and corresponding implementation schedule.

Subsequent to review and approval by the Agencies, it is anticipated that additional expansion can be designed and installed between September 2005 and March 2006. It may be possible to implement any upgrades during late 2005 if the upgrades are minimal in scope. If not, then Phase II upgrades will likely be scheduled for Spring 2006.

Phase III

It is anticipated that expansion evaluation for Phase III will be conducted during first 3 months of operation of the Phase II VCS expansion. The tentative schedule indicates that VCS system startup for Phase II will occur by April 2006. Therefore by approximately the end of July 2006 the evaluation for Phase III expansion will be completed.

By the end of August 2006 a work plan outlining a conceptual design for Phase III expansion (if necessary) will be delivered to the Agencies for review and approval. This plan will describe the basis for the proposed Phase III expansion and corresponding implementation schedule.

Subsequent to review and approval by the Agencies, it is anticipated that additional expansion can be designed and installed between September 2006 and March 2007. It may be possible to implement any upgrades during late 2006 if the upgrades are minimal in scope. If not, then Phase II upgrades will likely be scheduled for Spring 2007.

Other USEPA Comments

Professional Engineering Certification

The USEPA has required that the final design and installation of the proposed upgrade and expansion be conducted under the direct supervision of a professional engineer licensed in the State of Illinois. Mr. Jeff Pope is a licensed professional engineer in the State of Illinois and is leading both the design and installation of the VCS system modifications for the Hartford Working Group. As necessary, Mr. Pope will seal design and/or construction drawings.

Final System Installation Report

The USEPA has asked for the following: A report documenting installation of the upgrades should be submitted including system upgrades, well logs, as built drawings, and location, and layout of the system. The professional engineer in direct

supervision/responsible charge must certify and seal this report as to its accuracy and adequacy.

Clayton will develop a final system installation report that includes the information identified above. Mr. Pope of Clayton will certify the report as the licensed professional in responsible charge of the VCS upgrade and expansion activities for the Hartford Working Group.

Operation and Maintenance Plan

The USEPA has asked that an operation and maintenance plan be prepared for review and approval once the upgraded system is installed and operation begins.

Clayton plans to prepare an operation and maintenance plan for review and approval of the USEPA following system installation. A draft plan will be submitted to the USEPA within 45 days of the upgraded system startup.

Please contact me with any questions.

Sincerely,

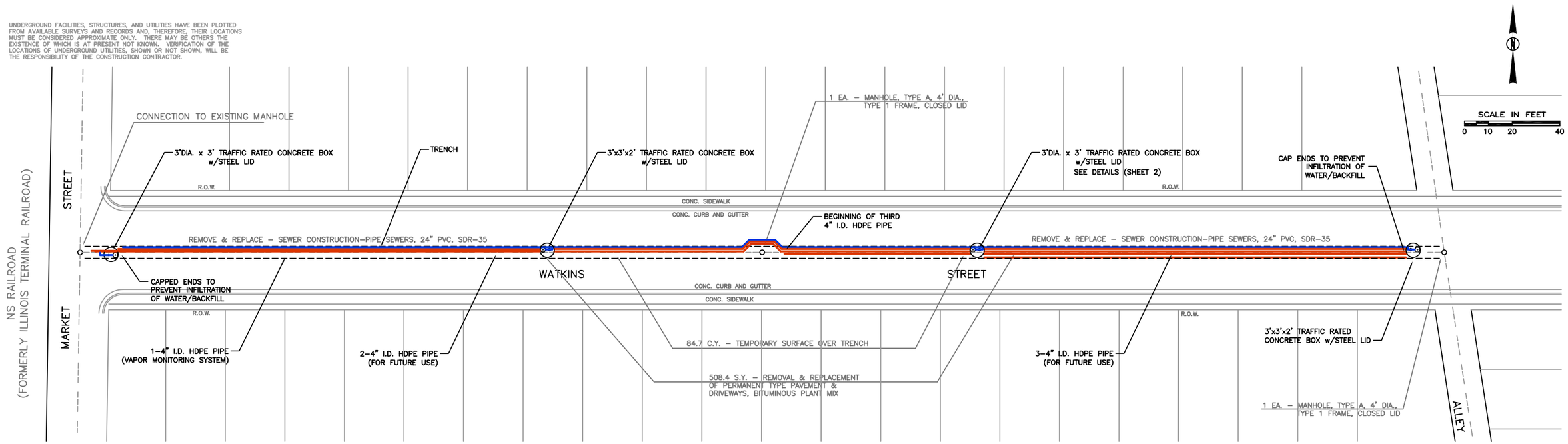
Monte M. Nienkerk

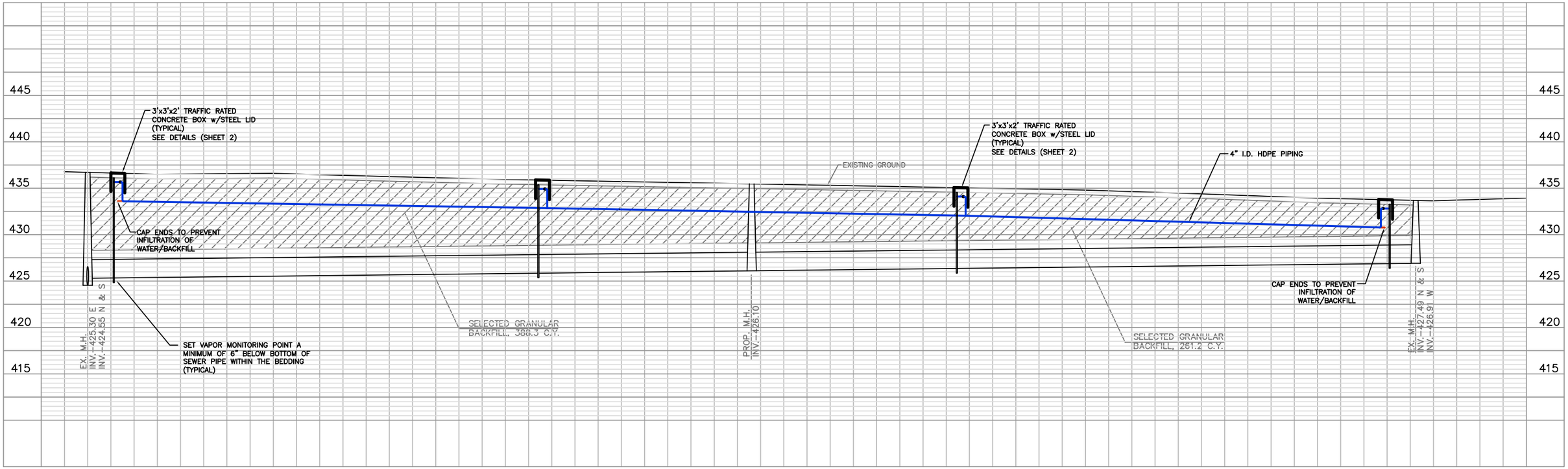
Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

Enclosures: Figures 1 through 4

cc: Hartford Working Group
Robert Egan (USEPA, Region 5 – 1 copy)
Tom Binz (TT EMI / USEPA – 4 copies)
Robert Howe (TT EMI / USEPA – 1 copy)
Jim Moore (IEPA, Springfield – 3 copies)
Chris Cahnovsky (IEPA, Collinsville – 2 copies)
Dave Webb (Illinois DPH – 1 copy)

UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS AND, THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS THE EXISTENCE OF WHICH IS AT PRESENT NOT KNOWN. VERIFICATION OF THE LOCATIONS OF UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, WILL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR.





NOTE: SANITARY SEWER SYSTEM EVALUATION & REHABILITATION - PHASE 2 - PLANS, SPECIFICATIONS AND DETAILS PROVIDED BY BLOTEVOGEL ASSOCIATES, INC. AS PART OF COMMUNITY DEVELOPMENT PROJECT NO. 821-26-10, DATED 12 / 17 / 2003.

NO.	DATE	BY	REVISIONS

ENGINEERS' SEAL

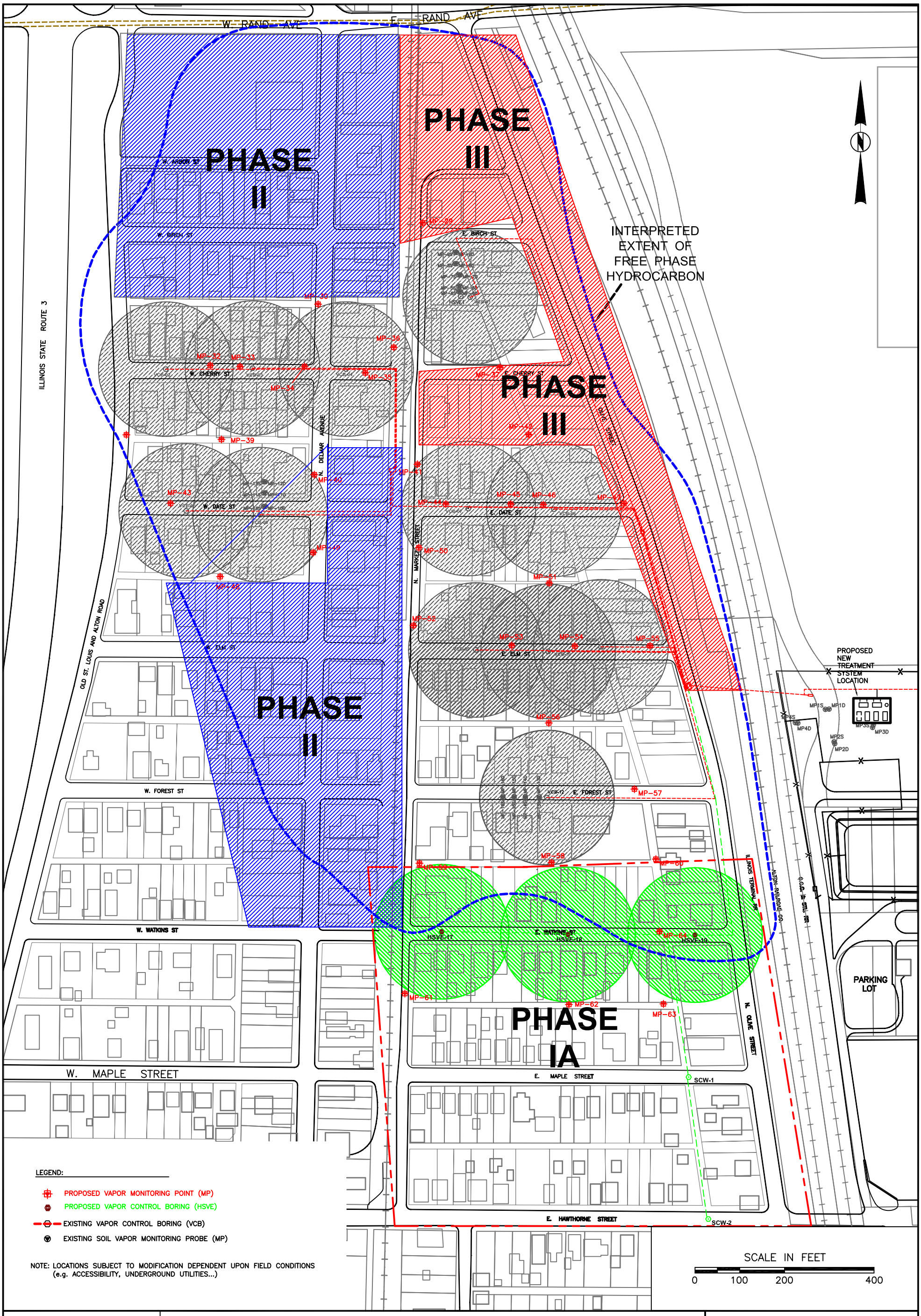
DESIGN BY: JLP
CHECKED BY:
DRAWN BY: BCP
DATE: 7–15–04
SCALE: AS SHOWN
CAD NO.: 0309513002Watkins
PROJECT NO.: 15–03095.13

Clayton GROUP SERVICES

SOIL VAPOR EXTRACTION SYSTEM
INSTALLATION DURING WATKINS STREET
SANITARY SEWER REHABILITATION

THE HARTFORD WORKING GROUP
HARTFORD, ILLINOIS

FIGURE
4



CHECK BY	JLP
DRAWN BY	BCP
DATE	7-21-04
SCALE	AS SHOWN
CAD NO.	VCS PHASE 1A
PRJ NO.	15-03095.13

VAPOR CONTROL SYSTEM UPGRADE
PHASE III EXPANSION

THE HARTFORD WORKING GROUP
HARTFORD, ILLINOIS

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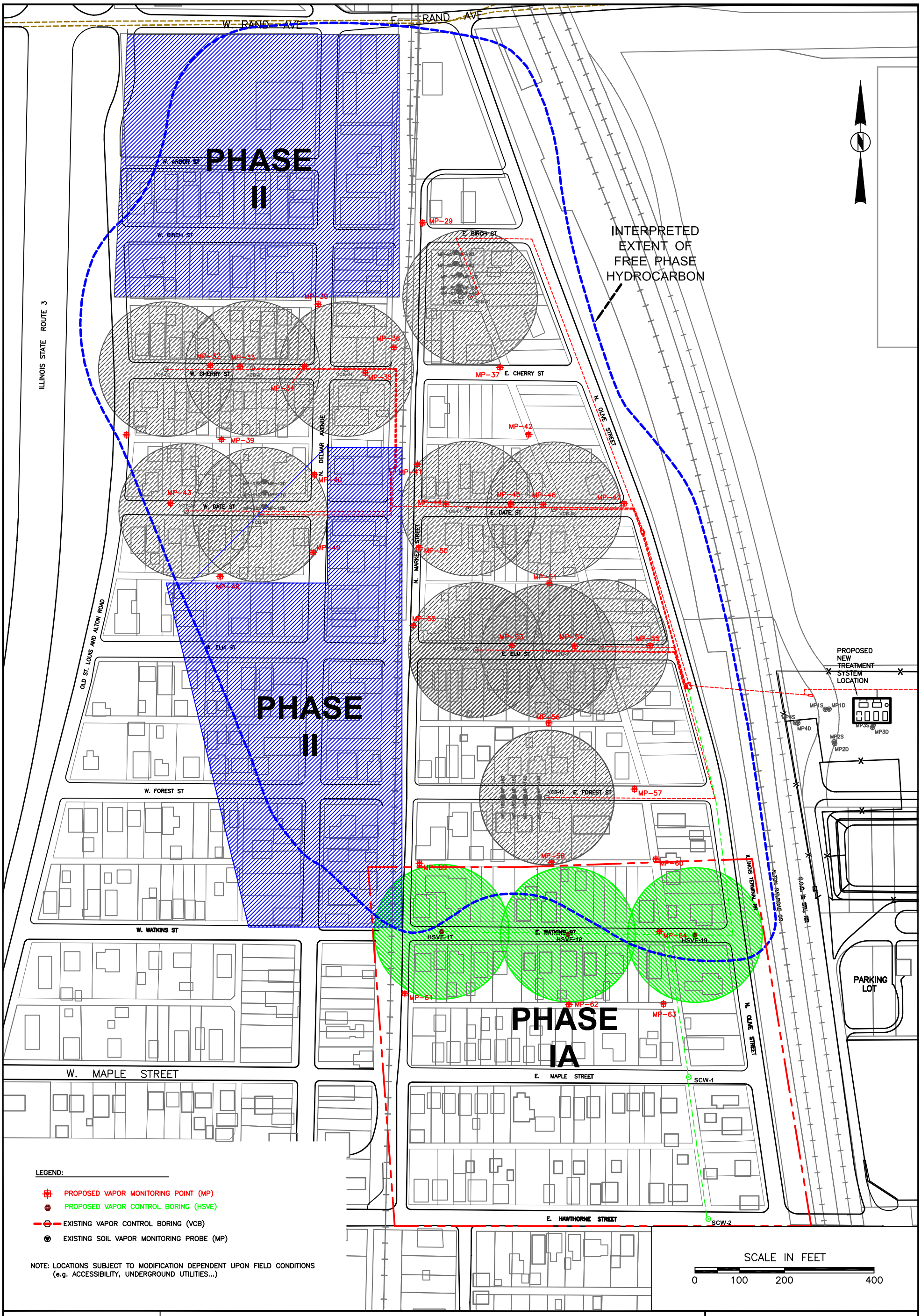
FIGURE 3



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PRJ NO.	15-03095.13

VAPOR CONTROL SYSTEM UPGRADE
PHASE II EXPANSION

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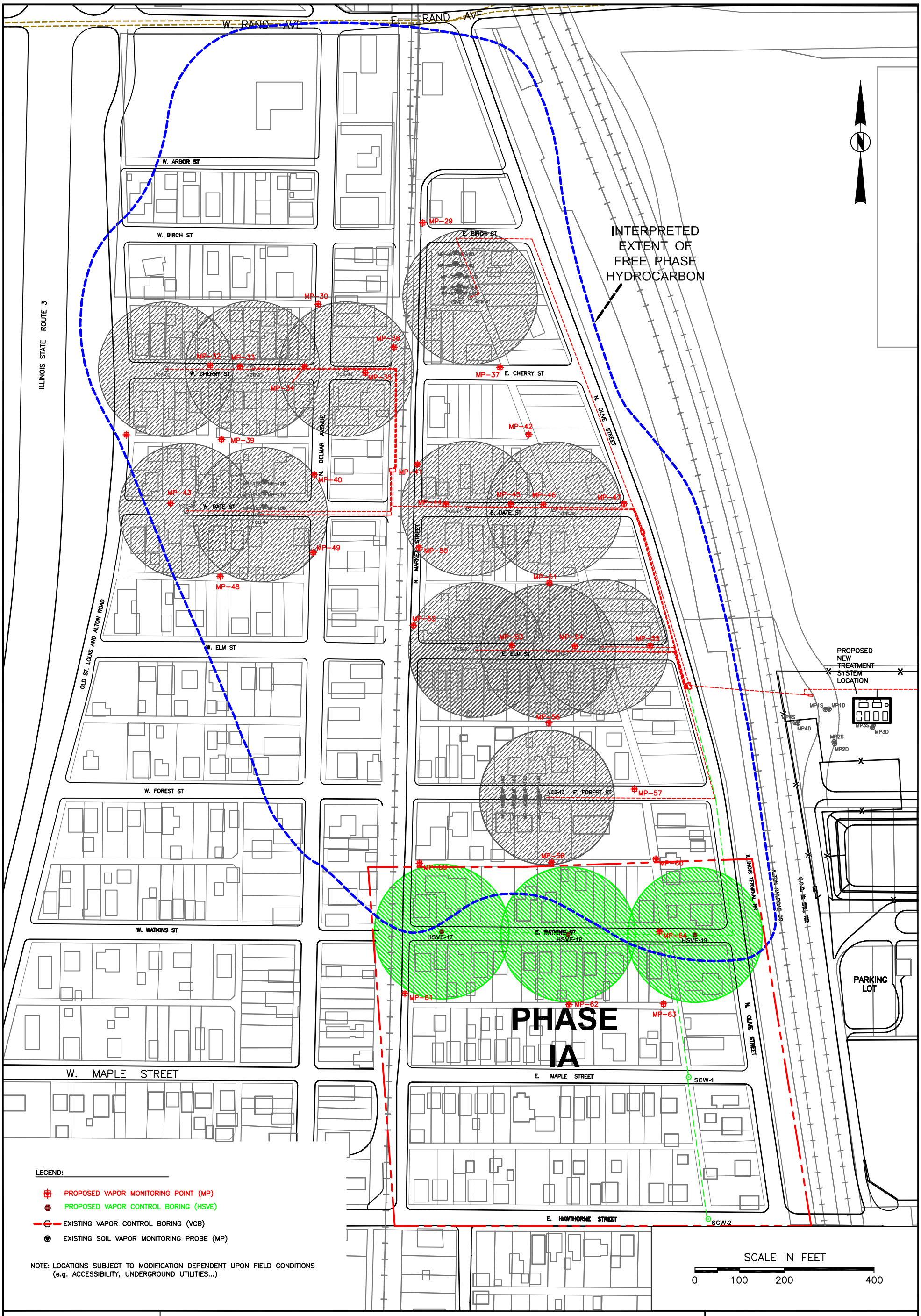
FIGURE 2



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DATE	7-21-04
SCALE	AS SHOWN
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PRJ NO.	15-03095.13

VAPOR CONTROL SYSTEM UPGRADE
PHASE IA EXPANSION

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FIGURE 1